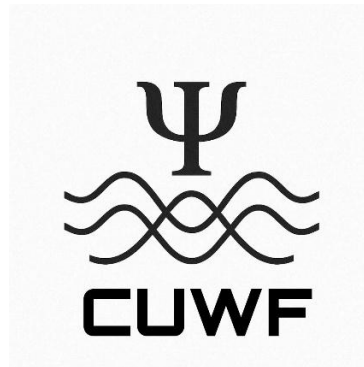




Chayut Universe Wave Function

CUWF Master Equation Guide III

Understanding the CUWF Master Equation:

The Full Explicit PDE-Expanded Form

Title: CUWF Master Equation Guide III - Understanding the CUWF Master Equation:

The Full Explicit PDE-Expanded Form

A Step-by-Step Conceptual Guide to the Operational Engine of the CUWF Master Equation

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Abstract

This guide presents the full PDE-expanded form of the CUWF Master Equation.

Where Guide I introduced the human-readable gateway form and Guide II clarified the raw unified ontological skeleton, Guide III opens the internal operational engine of the equation.

The central purpose of this guide is to show how the CUWF Master Equation becomes an explicit engine of evolution.

The PDE-expanded form expresses the universe-state as:

$$U(\mathbf{T}) = (X_i(x, \mathbf{T}), g_{ij}(x, \mathbf{T}), N_{\text{eff}}(\mathbf{T}))$$

and shows how this state evolves through three coupled engines:

the collapse-field or state-side engine,

the geometry or curvature-response engine,

and the effective degree-of-freedom flow engine.

These three engines are written as:

$$\partial X_{ij}(x, \tau) / \partial \tau = -G_{ij}(x, \tau) \partial \Phi / \partial X_j - \int K_{ij}(|x - x'|; \ell(\tau)) \Xi_{\text{eff}}(x, x', \tau) [X_j(x) - X_j(x')] dx'$$

$$\partial g_{ij}(x, \tau) / \partial \tau = -\alpha \partial^2 \Phi / (\partial X_i \partial X_j) + \beta F_{ij}(\Xi_{\text{eff}})$$

$$dN_{\text{eff}} / d\tau$$

$$= -\partial G / \partial N_{\text{eff}}$$

$$= -R(N(\tau), \lambda_{\text{soft}}(\tau), |R(\tau)|, \Xi_{\text{eff}}(\tau))$$

Together, they may be recombined into the compact PDE-vector form:

$$D/d\tau [X, g, N_{\text{eff}}]^T$$

$$= -\nabla_F G$$

$$= -[\delta G / \delta X, \delta G / \delta g, \partial G / \partial N_{\text{eff}}]^T$$

Guide III explains each component of this structure step by step.

It clarifies the meaning of X , g , N_{eff} , Φ , G_{ij} , K_{ij} , $\ell(\tau)$, Ξ_{eff} , F_{ij} , R , and $\nabla_F G$.

It shows how the three engines form an operational architecture.

It explains how collapse-field evolution, geometry evolution, nonlocal coupling, effective entanglement structure, and renormalization flow work together inside the CUWF Master Equation.

It also explains why the PDE-expanded form is not yet one concrete physical model, but rather the framework within which concrete CUWF models can be built.

The guide further shows how model-specific realizations, toy models, computation, prediction pathways, and future validation may arise from the PDE-expanded architecture.

The final synthesis of this guide is that Guide III completes the transition from readable doorway to raw skeleton to operational engine.

Guide I gave the reader a human-readable gateway.

Guide II revealed the raw unified skeleton.

Guide III opens the operational engine.

The main claim of Guide III is therefore precise:

the full PDE-expanded form is the operational engine architecture of the CUWF Master Equation.

It turns CUWF from a conceptual formulation into a disciplined framework for concrete model-building, computation, and future empirical testing.

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